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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

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Serial No.: 09/929,242

Examiner Boyer D. Ashley

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Group Art Unit 3724

For: RETRACTION SYSTEM FOR USE IN POWER EQUIPMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

APPEAL BRIEF**1. Real party in interest.**

The real party in interest is SD3, LLC, the assignee of the above-identified application. SD3 is a privately owned Oregon limited liability company.

2. Related appeals and Interferences.

All other known prior and pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal are listed below. These appeals are listed because SD3, LLC is the real party in interest and the appeals relate to various aspects of safety systems for power equipment.

1. Appeal of application serial number 09/929,221 (appeal brief filed, awaiting examiner's answer).
2. Appeal of application serial number 09/929,227 (notice of appeal filed).

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3. Appeal of application serial number 09/929,238 (appeal brief filed, awaiting examiner's answer).
4. Appeal of application serial number 09/929,240 (appeal brief filed, awaiting examiner's answer).
5. Appeal of application serial number 09/929,425 (appeal brief filed, awaiting examiner's answer).
6. Appeal of application serial number 09/929,426 (examiner reopened prosecution after applicant filed an appeal brief).
7. Appeal of application serial number 10/053,390 (appeal brief filed, awaiting examiner's answer).
8. Appeal of application serial number 10/100,211 (appeal brief filed, awaiting examiner's answer).
9. Appeal of application serial number 10/189,027 (appeal brief filed, awaiting examiner's answer).
10. Appeal of application serial number 10/189,031 (appeal brief filed, awaiting examiner's answer).
11. Appeal of application serial number 10/243,042 (examiner reopened prosecution after applicant filed an appeal brief).
12. Appeal of application serial number 10/292,607 (notice of appeal filed).

3. Status of claims.

The application was filed with claims 1-18 and claims 19-41 were added during prosecution. Claims 2-4, 6-18, and 25-39 were cancelled without prejudice and claims 40 and 41 were withdrawn from consideration. Claims 19-24 are allowed. Claims 1 and 5 are rejected. The appealed claims are claims 1 and 5.

4. Status of amendments.

All amendments have been entered.

5. Summary of claimed subject matter.

The claims at issue in this appeal relate to safety systems for woodworking machines such as table saws, miter saws, chop saws, radial arm saws, circular saws, band saws, jointers, and planers. Those machines have cutting tools or blades that present a danger to persons using the machines, and each year tens of thousands of people in the United States are severely injured on those machines.¹ Generally, the claims at issue are directed to woodworking machines that detect when a person contacts the cutting tool and then retracts the cutting tool to mitigate any injury. One embodiment of the technology is a table saw configured to detect contact between a person and the blade and to retract and stop the blade upon detection of contact. Such table saws are now being sold under the name SawStop and those saws have already saved the hands or fingers of at least 31 different people who had accidents while using

¹ The U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System, Directorate for Epidemiology, estimates 58,958 injuries involving various types of power saws and 20,899 injuries involving "saws, not specified" during 2004. (These statistics are publicly available at www.cpsc.gov. The relevant product codes for searching include codes 825, 832, 841, 842, 843, and 845.)

the saws.² Those people likely would have suffered life-changing lacerations or amputations if they had been working on non-SawStop saws. Instead, in each case the person walked away with no more than a scratch. The claims at issue in this appeal describe machines such as these table saws.

Claim 1, the only independent claim at issue in this appeal, describes a woodworking machine having a cutting region for cutting workpieces (such as the table saw shown in Figures 3 and 4, the miter saw shown in Figures 7-9, and the band saw shown in Figure 13). The machine includes a movable cutting tool (such as blade 300 in Figures 3-6), and a detection system adapted to detect contact between a person and the cutting tool (such as detection subsystem 22 shown schematically in Figure 1). The machine also includes a reaction system configured to retract the cutting tool at least partially away from the cutting region upon detection of contact by the detection system. The reaction system is discussed generally in paragraph 36 in the published specification and on page 12, line 19 to page 13, line 10 in the specification as submitted.

One exemplary embodiment of a reaction system is discussed in paragraphs 38 through 42 in the published specification, which corresponds to the text extending from page 13, line 18 to page 15, line 17 in the specification as submitted. That embodiment includes a worm gear 307 that snaps loose when a brake stops the blade, allowing the blade to retract out of the cutting region. Another exemplary embodiment of a reaction system is discussed in paragraph 46 in the published specification and on page 17,

² SawStop saws are made and sold by SawStop, LLC, a wholly-owned subsidiary of applicant SD3, LLC. Pictures and videos of SawStop saws can be seen on the Internet at www.sawstop.com.

lines 1-8 in the specification as submitted. That embodiment includes a brake pawl 314 mounted to the frame of a saw in such a way that the blade will retract by "climbing" down the pawl. Another exemplary embodiment includes a compressible bushing, such as bushing 33 shown in Figure 6 and discussed in paragraph 47 in the published specification and on page 17, line 9 to page 18, line 2 in the specification as submitted. Other embodiments of a reaction system as set forth in claim 1 are discussed at various locations in the specification and described in the allowed claims.

6. Grounds of rejection to be reviewed on appeal.

The grounds of rejection presented for review are:

1) a rejection of claim 1 under 35 USC 103(a) as obvious in light of a German document (DE 19609771, hereinafter DE '771) combined with Friemann (US Patent 3,858,095); and

2) a rejection of claim 5 under 35 USC 103(a) as obvious in light of DE '771 combined with Friemann and Terauchi (US Patent 4,512,224).

7. Argument.

Obviousness under 35 USC 103(a)

I. Claim 1.

Claim 1 was rejected under 35 USC 103(a) as obvious in light of DE '771 combined with Friemann. DE '771 discloses a safety system for a circular saw bench. The safety system includes a sensor to detect if a hand moves within a certain distance to the blade. If the hand is detected, then a pneumatic or hydraulic cylinder lowers the blade. (DE '771 translation, pp. 3-4.) Friemann discloses a protective circuit for band cutter machines used in the textile industry. (Friemann, column 1, lines 5-11.) The

machine includes a band cutter looped around several wheels. (Friemann, Figure 2.) A motor drives one of the wheels to move the cutter and a user slides a piece of textile past the moving cutter to cut the textile. If during that process the hand of a person contacts the band cutter, then the protective circuit detects that contact and triggers an electromechanical brake and a motor brake to stop the cutter. (Friemann, column 1, lines 45-47, column 3, lines 66-68 & column 4, lines 3-5.) Thus, Friemann's system detects actual contact with the band cutter, not proximity to the cutter. The examiner says it would have been obvious to combine the contact detection system of Friemann with the retraction system of DE '771 to arrive at the invention set forth in claim 1.

The Board should reverse the rejection because: 1) DE '771 teaches away from the claimed invention, 2) there is no reasonable expectation that the combination would succeed, 3) there is no teaching, suggestion or motivation to make the combination, and 4) there are objective indicia of non-obviousness. These points are explained below.

1. DE '771 teaches away from the claimed invention.

As a general rule, a reference that teaches away from a claimed invention does not support a prima facie case of obviousness. See, e.g., McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1354, 60 USPQ2d 1001 (Fed. Cir. 2001) ("We have noted elsewhere, as a 'useful general rule,' that references that teach away cannot serve to create a prima facie case of obviousness." Citation omitted.); In re Haruna, 249 F.3d 1327, 1335-1336, 58 USPQ2d 1517 (Fed. Cir. 2001) ("Because Benne teaches away from a final product having a broad transparent outer region, it does not render the claimed design obvious."); In re Gelsler, 116 F.3d 1465, 1469, 43 USPQ2d 1362 (Fed. Cir. 1997) ("[A] prima facie case of obviousness can be rebutted if the applicant ... can

show 'that the art in any material respect taught away' from the claimed invention." Quoting In re Malagari, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974)); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (inoperable modification teaches away); In re Spinnoble, 405 F.2d 578, 587, 160 USPQ 237 (CCPA 1969) (references teach away because the combination "would produce a seemingly inoperative device").

In the case at hand, DE '771 teaches away from a woodworking machine as specified in claim 1 because it discloses a proximity detection system, not a contact detection system. In other words, the system disclosed in DE '771 detects a hand *before* it contacts the blade. Detecting the hand before it contacts the blade, assuming such a system works, avoids any injury and provides time for the pneumatic or hydraulic cylinder to lower the blade. If the saw disclosed in DE '771 were changed to detect contact, then a user's hand would be injured before the blade retracted. A severe laceration or amputation could occur in the time required for the pneumatic or hydraulic cylinder to lower the blade. Thus, the result of the modification suggested by the examiner would be a more dangerous saw. Clearly, it would not have been obvious to modify the saw disclosed in DE '771 to make it more dangerous. In fact, changing DE '771 to a contact detection system as disclosed in Friemann would defeat the safety that the inventors of DE '771 were trying to achieve. The cited prior art references simply do not give any reason to make that change. Accordingly, DE '771 teaches away from a woodworking machine with a contact detection system as required by applicant's claim 1. This is a significant point that rebuts the examiner's obviousness rejection.

Additionally, the disclosure of DE '771 recognizes that "[c]ircular saw benches are among the most dangerous machine tools used in professional as well as hobby work applications" (DE '771 translation, p.1), and that disclosure identifies three potential solutions to that problem: a laser line to warn the user if his hand is in the cutting line of the blade, a protective hood, and a hand proximity sensor. However, DE '771 never mentions or even suggests a system to detect contact between a hand and the blade. The fact that DE '771 discloses multiple potential solutions without mentioning the combination set forth in applicant's claim 1 shows that DE '771 teaches away from applicant's invention. At the very least, the combination set forth in applicant's claim 1 was not obvious to the inventors named in DE '771. This fact further rebuts the examiner's obviousness rejection.

2. There is no reasonable expectation that the combination would succeed.

In order to support an obviousness rejection based on a combination of references, there must be a reasonable expectation that the combination would be successful. The obviousness rejection cannot stand without that expectation. In re Dow Chemical Co., 837 F.2d 469, 473, 5 USPQ2d (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art."); see also MPEP 2143.02 ("Reasonable Expectation of Success Is Required"). In the case at hand, there is no reasonable expectation that the contact detection system of Friemann could be successfully implemented in a saw as disclosed in DE '771, and therefore, the

obviousness rejection should be reversed. This is an independent reason why the obviousness rejection should be reversed.

The device disclosed in DE '771 is a circular saw bench while the device disclosed in Friemann is a band cutter. Those machines are constructed very differently and the differences would prevent the detection system disclosed in Friemann from being successfully implemented in the saw disclosed in DE '771. For example, the band cutter in Friemann moves in a path around three rollers and one pulley. (Friemann, Figure 2.) A pair of sliding contacts or rollers couple the band cutter to the detection circuit and remain in contact with the side of the band cutter as the band cutter moves around the wheels. (Friemann, column 3, lines 7-13.) However, there is no suggestion in any cited reference that sliding contacts or rollers as disclosed in Friemann would work in a saw as disclosed in DE '771 because that saw has a circular blade that spins instead of a band blade that moves around wheels. The contacts or rollers would skip over the side of a spinning blade because different points on the spinning blade would have different angular velocities depending on how far the point is from the axis of rotation. The result is that the contacts or rollers would contact the blade only intermittently, and intermittent contact is unacceptable for a contact detection system because a person may touch the blade at any time and because the intermittent contact could cause the reaction system to misfire. Some other type of connection would be required for a spinning circular blade but Friemann and DE '771 fail to teach any such connection. Additionally, the band cutter disclosed in Friemann does not change its position relative to the work surface; it remains in position as a user pushes textile past the cutter. The blade in a circular saw bench, however, is configured to change its

position relative to the work surface by moving up or down or tilting in order to cut material of varying thicknesses and to make angled cuts. This difference between band cutters and circular saw benches means that the connection between the detection system and the circular blade, whatever that connection turned out to be, would somehow have to accommodate the changing position of the circular blade. Friemann and DE '771, however, fail to identify this problem or any solution to it.

The contact detection system in Friemann also requires that the band cutter be electrically isolated so that contact can be detected. If the blade were not isolated, then contact could not be detected because the blade would be grounded. Friemann isolates the band cutter by placing a rubber covering on the periphery of the pulleys around which the band cutter moves. (Friemann, column 3, lines 1-6.) If a contact detection system were somehow implemented in the circular saw bench disclosed in DE '771, then the circular blade would also have to be isolated in order to detect contact. However, that blade is mounted on a metal arbor and therefore grounded, so it could not be isolated in the manner taught by Friemann. Some other isolation mechanism would be required.

All these differences between a circular saw bench and a band cutter show that there is no reasonable expectation that the detection system of Friemann could be successfully implemented in the saw shown in DE '771. At the very least, the cited references have not enabled that combination. This is significant because, in order to support an obviousness rejection, the cited references "must provide an enabling disclosure, i.e., [it] must place the claimed invention in the possession of the public. ... An invention is not 'possessed' absent some known or obvious way to make it." In re

Payne, 606 F.2d 303, 314, 203 USPQ 245, 255 (CCPA 1979) (citations omitted); see also In re Kumar, 418 F.3d 1361, 1369, 76 USPQ2d 1048 (Fed. Cir. 2005) ("To render a later invention unpatentable for obviousness, the prior art must enable a person of ordinary skill in the field to make and use the later invention."); Motorola, Inc. v. Interdigital Technology Corp., 121 F.3d 1461, 1471, 43 USPQ2d 1481 (Fed. Cir. 1997) (district court correctly instructed the jury that prior art must be enabling to invalidate claims as obvious); Beckman Instruments, Inc. v. LKB Produkter AB, 892 F.2d 1547, 1551, 13 USPQ2d 1301, 1304 (Fed. Cir. 1989) ("In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method.") There simply is no teaching in any cited reference explaining how to implement Friemann's detection system in the circular saw bench disclosed in DE '771. Therefore, claim 1 in the present application is not obvious in light of those references. In fact, the absence of a reference suggesting the use of a contact detection system with a circular blade, even though Friemann teaches such a detection system for band cutters, supports the conclusion that contact detection systems have been understood by those of skill in the art not to work with circular blades.

3. There is no teaching, suggestion or motivation to make the combination.

The obviousness rejection of claim 1 also should be reversed because there is no teaching, suggestion or motivation in the prior art to combine DE '771 and Friemann. Without such a teaching, suggestion or motivation, the obviousness rejection cannot stand. In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453 (Fed. Cir. 1998). Additionally, the suggestion to combine references "must be founded in the prior art, not in the applicant's disclosure." In re Vaeck, 947 F.2d 488, 493, 20 USPQ2d 1438 (Fed.

Cir. 1991). This is another independent reason why the obviousness rejection should be reversed.

The examiner said the motivation to combine references was "preventing injury to user while allowing greater flexible work around the blade." (Final Office Action mailed 9-22-05, p. 3.) This is the only motivation identified by the examiner to make the combination. However, there is no support for this motivation. To the contrary, combining the references would result in a less safe saw because DE '771 as modified would detect contact instead of proximity. As explained previously, modifying DE '771 to detect contact would mean a person could suffer a serious laceration or amputation because it takes time to retract the blade and a person would already be in contact with the blade when the blade started to retract. In view of the fact that DE '771 says it prevents injuries by detecting proximity, why would a person of ordinary skill in the art think to change that saw to detect contact, as suggested by the examiner? Where is the suggestion to make the change to a potentially more dangerous configuration?

Additionally, nothing in the prior art suggests that a circular saw bench equipped with a contact detection system would result in "greater flexible work," as alleged by the examiner. That is simply a conclusion drawn by the examiner after reading applicant's disclosure. Moreover, the desire for "greater flexible work" cannot constitute a suggestion to combine references because that desire is simply a wish for enhanced products. If a wish for enhanced products satisfied the requirement for a suggestion to combine references, then no improvement would be patentable because there is always a desire for enhanced products. Rather, there must be some express or implicit teaching, suggestion or motivation found in the prior art, or in the knowledge generally

available to a person of ordinary skill in the art, to make the claimed combination. Expressed differently, it is not the desire to make something better but the solution that must be suggested or taught, and that suggestion must be clear and particular.

The requirement for a specific and clear suggestion to combine references is explained by the case of In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453 (Fed. Cir. 1998). In that case the Board of Patent Appeals and Interferences affirmed the rejection of an application concerning a satellite communication system. The application addressed the problem of how to keep a receiver on the earth in communication with a satellite moving around the earth. Typically, a satellite transmits multiple signal beams to the earth and a receiver must switch from one beam to another as the satellite moves. This switching from beam to beam is referred to as a handover, and a disruption in communication is more likely during a handover. Rouffet minimized the number of handovers required by changing the shape of the transmitted beams from cones to fans. Fan-shaped beams have elliptical footprints that extend parallel to the direction of a satellite's motion. The elliptical footprints help ensure that a fixed point on the earth will remain within the satellite's beam. Id. at 1353.

The examiner rejected Rouffet's claims as obvious in light of a patent to King, a patent to Rosen, and a conference report by Ruddy. King disclosed a system to launch a plurality of low-orbit satellites. Rosen disclosed a geostationary satellite using fan-shaped beams oriented in an east-west direction. Ruddy disclosed a television broadcast system that transmitted a single fan-shaped beam upward from the earth into which satellites would successively enter. This fan-shaped beam was oriented so its long axis was aligned with the long axes of the satellites' orbits. Id. at 1356. The Board

affirmed the examiner's rejection and added an alternative rejection based on the combination of two other patents. Rouffet then appealed to the Federal Circuit.

On appeal, the Federal Circuit found no error in the Board's conclusion that "the combination of King, Rosen, and Ruddy contains all of the elements claimed in Rouffet's application." Id. at 1357. Nevertheless, the Federal Circuit concluded "the Board reversibly erred in determining that one of skill in the art would have been motivated to combine these references in a manner that rendered the claimed invention obvious." Id. The Federal Circuit said the Board erred by failing to identify any specific understanding or scientific principle suggesting the combination. The court explained that an examiner cannot simply find claim elements in the prior art and then combine them to arrive at the invention because such an approach would allow hindsight to influence the determination. Rather, an examiner must find the claim elements in the prior art and then specify how the prior art suggests or motivates the combination of those elements. This is explained in the following discussion from Rouffet:

As this court has stated, "virtually all [inventions] are combinations of old elements." *Environmental Designs, Ltd. V. Union Oil Co.*, 713 F.2d 693, 698, 218 U.S.P.Q. 865, 870 (Fed. Cir. 1983); *see also Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1579-80, 219 U.S.P.Q. 8, 12 (Fed. Cir. 1983) ("Most, if not all, inventions are combinations and mostly of old elements.") Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." *Sensonics, Inc. v. Aerosonic Corp.*, 81 F.3d 1566, 1570, 38 U.S.P.Q.2d 1551, 1554 (Fed. Cir. 1996).

To prevent the use of hindsight based on the invention to defeat patentability of the invention, this court requires the examiner to show a motivation to combine the references that create the case of obviousness. In other words, the examiner must show reasons that the skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.

This court has identified three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. In this case, the Board relied upon none of these. Rather, just as it relied on the high level of skill in the art to overcome the differences between the claimed invention and the selected elements in the references, it relied upon the high level of skill in the art to provide the necessary motivation. The Board did not, however, explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. Instead, the Board merely invoked the high level of skill in the field of art. If such a rote invocation could suffice to supply a motivation to combine, the more sophisticated scientific fields would rarely, if ever, experience a patentable technical advance. Instead, in complex scientific fields, the Board could routinely identify the prior art elements in an application, invoke the lofty level of skill, and rest its case for rejection. To counter this potential weakness in the obviousness construct, the suggestion to combine requirement stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.

Because the Board did not explain the specific understanding or principle within the knowledge of a skilled artisan that would motivate one with no knowledge of Rouffet's invention to make the combination, this court infers that the examiner selected these references with the assistance of hindsight. This court forbids the use of hindsight in the selection of references that comprise the case of obviousness. See *In re Gorman*, 933 F.2d 982, 986, 18 U.S.P.Q.2d 1885, 1888 (Fed.Cir.1991). Lacking a motivation to combine references, the Board did not show a proper *prima facie* case of obviousness. This court reverses the rejection over the combination of King, Rosen, and Ruddy. (Rouffet, 149 F.3d at 1357-1358.)

This discussion is pertinent to the case at hand because the examiner in the present application did not identify any specific understanding or technological principle that would motivate a person of ordinary skill to select the various elements from the

prior art and arrange them as set forth in applicant's claims, just as the examiner in Rouffet failed to identify any such understanding or principle. As stated, the examiner in the case at hand simply said it would have been obvious to combine the references to prevent injury and to allow greater flexibility. (Final Office Action mailed 9/22/05, p. 3.) That is simply a rote invocation used to justify the combination of references, just as the reliance on a high level of skill was a rote invocation used to justify the combination of references in Rouffet. As explained by the Federal Circuit, such rote invocations cannot provide the required motivation because then there would rarely be any patentable technical advance. Instead, a specific suggestion to make a combination is required because, as the Federal Circuit has said, "invention itself is the process of combining prior art in a nonobvious manner." *Id.* at 1359. In the case at hand, the examiner failed to identify any specific suggestion to make the combination.

Another case explaining the requirement of a specific suggestion to combine references is In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (citations omitted), *abrogated on other grounds* in In re Gartside, 203 F.3d 1305, 53 USPQ2d 1769 (Fed. Cir. 2000). In that case the Board of Patent Appeals and Interferences affirmed the rejection of an application concerning a trash bag made to look like a jack-o'-lantern when filled with leaves or trash. The application was rejected in light of conventional plastic trash bags combined with orange crepe paper jack-o'-lanterns (referred to as the Holiday reference) and paper bag pumpkins (referred to as the Shapiro reference). The Federal Circuit reversed the rejection because the Board did not identify a suggestion to make the combination. The Federal Circuit explained,

[R]ather than pointing to specific information in Holiday or Shapiro that suggest the combination with the conventional bags, the Board instead described in detail the similarities between the Holiday and Shapiro references and the claimed invention, noting that one reference or the other – in combination with each other and the conventional trash bags – described all of the limitations of the pending claims. ... Nowhere does the Board particularly identify any suggestion, teaching, or motivation to combine the children's art references (Holiday and Shapiro) with the conventional trash or lawn bag references, nor does the Board make specific – or even inferential – findings concerning the identification of the relevant art, the level of ordinary skill in the art, the nature of the problem to be solved, or any other factual findings that might serve to support a proper obviousness analysis. ...

...Yet this reference-by-reference, limitation-by-limitation analysis fails to demonstrate how the Holiday and Shapiro references teach or suggest their combination with the conventional trash or lawn bags to yield the claimed invention. ... Because we do not discern any finding by the Board that there was a suggestion, teaching, or motivation to combine the prior art references cited against the pending claims, the Board's conclusion of obviousness, as a matter of law, cannot stand. (Dembiczak, 175 F.3d at 1000.)

Just as in Dembiczak, the examiner in the case at hand made a reference-by-reference, limitation-by-limitation analysis without identifying any specific teaching or suggestion in the prior art to make the combination. In other words, the examiner simply found what he thought were the elements of applicant's claims, combined those elements according to applicant's teachings, and then justified the combination by saying a person of ordinary skill would have known the combination was better. As explained in Dembiczak, that type of analysis cannot support a conclusion of obviousness. The Federal Circuit clearly stated: "Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight." Id. at 999. In the case at hand, just as in Dembiczak, the examiner "fell into the hindsight trap." Id. It is only by looking at applicant's disclosure

that one learns to incorporate a contact detection system and a reaction system configured to retract a cutting tool; the cited references do not suggest that combination.

A factor that may be considered in determining whether the prior art suggests a particular combination is whether the combination would require a substantial reconstruction or change the principle of operation of the device being modified. If it would, then there is no suggestion to make the combination. This is explained by the case of In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). In that case, claims directed to an oil seal comprising a bore engaging portion with a resilient sealing member were rejected as obvious in light of a combination of references, including a primary reference with a more rigid seal. The court reversed the rejection, explaining that the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." Id. at 813, 123 USPQ at 352.

Ratti is analogous to the case at hand because the proposed combination of DE '771 with Friemann would require a substantial reconstruction and redesign of the circular saw bench disclosed in DE '771. As explained previously, that saw would have to be modified to include some type of connector between the spinning blade and the detection circuitry, and it would have to be modified somehow to isolate the blade electrically from the rest of the saw. Additionally, the basic principle of operation of the device disclosed in DE '771 is to detect a hand before it contacts the blade to avoid any injury and to provide time for the blade to retract. If the saw disclosed in DE '771 were modified to detect contact, then that principle would be changed, and as a result, a user

could suffer a severe laceration or amputation during the time required for the hydraulic or pneumatic cylinder to lower the blade. These are substantial changes to the circular saw bench disclosed in DE '771, and these changes support the conclusion that there is no suggestion to make the combination, just as similar facts showed there was no suggestion to combine references in Ratti.

Finally, a restriction requirement in the present application supports the conclusion that there is no suggestion to replace the proximity detection system of DE '771 with the contact detection system of Friemann. The initial examiner assigned to the application issued a restriction requirement in which he identified claims that required contact detection as "Invention I," and claim 3 which required proximity detection as "Invention II." He then said:

6. Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions [sic] a contact detection system set up to determine contact is used for the function of detecting contact as opposed to proximity.

7. Because these Inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper. (Office Action mailed 1/13/04, p. 3.)

This restriction requirement supports the conclusion that there is no suggestion to combine DE '771 and Friemann because contact detection systems and proximity detection systems are patentably distinct.

4. There are objective indicia of non-obviousness.

Another factor showing that a woodworking machine as described in claim 1 would not have been obvious is the existence of objective indicia of non-obviousness. Every year in the United States there are tens of thousands of people severely injured with power saws according to the U.S. Consumer Product Safety Commission, National Electronic Injury Surveillance System, Directorate for Epidemiology.³ These are all severe injuries that require a visit to a hospital emergency room. The number and severity of these injuries clearly shows there is a long felt need for safer saws. The fact that others have tried to solve this problem is evidenced by the existence of DE '771 and Friemann. However, the continued high number of severe injuries shows that those attempts have failed. Fortunately, saws constructed as specified in applicant's claims have the potential to significantly reduce the severity of these injuries. The long felt need for safer saws and the failure of others to satisfy that need are objective indicia that support the conclusion that applicant's claims are non-obvious.

II. Claim 5.

Claim 5 was rejected under 35 USC 103(a) as obvious in light of DE '771 combined with Friemann and Terauchi (US Patent 4,512,224). Claim 5 depends from claim 1 and further specifies that "the reaction system includes a brake mechanism configured to stop the rotation of the blade upon detection of contact by the detection system." The examiner says DE '771 and Friemann disclose the invention as claimed except for a brake mechanism configured to stop the rotation of the blade upon

³ These statistics are available from the U.S. Consumer Product Safety Commission at www.cpsc.gov.

detection of contact. The examiner cites Terauchi to show "that it is old and well known in the art to stop the rotation of a blade while retracting the blade upon detection of an unsafe condition for the purpose of preventing damage to the blade." (Final Office Action mailed 9-22-05, p. 3.) The examiner combines these three references to reject the claim.

The Board should reverse this rejection for the reasons given above concerning claim 1 because this rejection depends on the improper combination of DE '771 and Friemann. The Board also should reverse this rejection because: 1) Terauchi is non-analogous art, and 2) there is no teaching, suggestion or motivation to combine Terauchi with the other references. These points are explained below.

1. Terauchi is non-analogous art.

The Board should reverse this rejection because Terauchi is non-analogous art.⁴ Terauchi discloses a slitter machine to cut fabric rolled onto a tube. The roll is held horizontal by a guide rod and the roll is rotated on the guide rod while a blade moves forward to cut the roll. The blade will advance until a limit switch contacts a stop, at which point the blade will move back. If the limit switch fails, then the blade will continue to move forward without stopping until it contacts the rod supporting the roll. If that contact occurs, an electric current will flow between the blade and the rod to signal the blade to move back and/or stop. (Terauchi, columns 2 & 3.)

⁴ The first step in an obviousness analysis is to identify the scope and content of the prior art. Graham v. John Deere Co., 383 U.S. 1, 17, 86 S.Ct. 684, 693-94, 15 L.Ed.2d 545, 148 USPQ 459, 467 (1966). In other words, one must determine what art may be considered. Art that may be considered is called "analogous" while art that may not be considered is called "non-analogous." See In re Clay, 966 F.2d 656, 658, 23 USPQ2d 1058 (Fed. Cir. 1992). Whether a reference is analogous is a question of fact. Id.

The Federal Circuit has identified two criteria for determining whether a reference is analogous art. The first is whether the reference is from the same field of endeavor as applicant's invention. If it is, then the reference is analogous. If it is not, then the second criterion must be considered. The second criterion is whether the reference is reasonably pertinent to the particular problem addressed by the inventor. Id. at 658-659.

The Federal Circuit applied these criteria in the case of In re Clay, 966 F.2d 656, 658, 23 USPQ2d 1058 (Fed. Cir. 1992). In that case, the Federal Circuit reversed a rejection of claims to a process for storing liquid hydrocarbon in a tank having a dead volume between the bottom of the tank and its outlet. Id. at 657. The process included the step of placing gel in the dead volume. The claims were rejected in light of two references: Hetherington, which disclosed a petroleum storage tank that used bladders to fill the dead space at the bottom of the tank, and Sydansk, which taught using gel to fill anomalies in underground petroleum formations. Clay argued that Sydansk should not be considered because it was non-analogous art. The Board of Patent Appeals and Interferences, however, ruled that Sydansk was in the same field of endeavor, and therefore analogous, because the gel disclosed in Sydansk "would have a number of applications within the manipulation of the storage and processing of hydrocarbon liquids ... [and that] the gel as taught in Sydansk would be expected to function in a similar manner as the bladders in the Hetherington patent." Id. at 659.

Clay then appealed to the Federal Circuit. The first question addressed by the Federal Circuit was whether Sydansk was in the same field of endeavor as Clay. The court ruled that it was not, saying: "Sydansk cannot be considered to be within Clay's field of endeavor merely because both relate to the petroleum industry." Id. The court

explained that Sydansk dealt with underground formations while Clay dealt with man-made storage tanks, and Sydansk's invention operated at high temperatures and pressures while Clay's invention operated at ambient temperature and atmospheric pressure. Because of these differences, the court ruled that the two references were from different fields of endeavor: "Clay's field of endeavor is the *storage* of refined liquid hydrocarbons. The field of endeavor of Sydansk's invention, on the other hand is the *extraction* of crude petroleum. The Board clearly erred in considering Sydansk to be within the same field of endeavor as Clay's." Id. (emphasis in original).

The Federal Circuit then considered the second criterion, whether Sydansk was reasonably pertinent to the problem addressed by Clay, and stated:

A reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve. If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. An inventor may well have been motivated to consider the reference when making his invention. If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it. (Id. at 659)

The Federal Circuit applied that standard and explained that the purpose of Clay's invention was to displace liquid from dead spaces in a storage tank while the purpose of Sydansk's invention was to recover oil from rock. The court also explained that a subterranean formation "is not structurally similar to, does not operate under the same temperature and pressure as, and does not function like Clay's storage tanks." Id. at 660. Because of these differences the court concluded that Sydansk was not

reasonably pertinent to the problem addressed by Clay, and therefore, Sydansk was non-analogous and should not have been considered.

The situation in Clay is similar to the case at hand. Applicant's field of endeavor is woodworking machinery while Terauchi's field of endeavor is textile slitting. (Terauchi, column 1, lines 6-17.) Woodworking machines are not used to slit textiles, and textile slitters are not used to cut wood. Woodworking machines and textile slitters operate differently. For example, in a woodworking machine as described in applicant's claims, a person typically holds a workpiece and either moves the workpiece into contact with the blade or moves the blade into contact with the workpiece to make a cut. In a textile slitter, a roll of cloth is held by a rod and rotated while a blade moves automatically to slit the roll. An operator is not required to hold the roll or move the blade into contact with the cloth. Thus, woodworking machines and textile slitters operate under different principles, serve different purposes, and require different manners of operation. The differences between these fields are similar in scope to the differences between the fields of storing and extracting petroleum described in Clay, and as a result, applicant's invention and Terauchi are from different fields of endeavor. Thus, the question becomes whether Terauchi is reasonably pertinent to the problem addressed by applicant.

Terauchi is not reasonably pertinent to the problem addressed by applicant because Terauchi's textile slitter would not have commended itself to an inventor considering how to stop a cutting tool upon detection of contact between a person and the cutting tool. Terauchi addresses a different purpose, namely, how stop or retract a cutting blade "when the rotary cutting blade contacts the guide holder rod." (Terauchi,

column 1, lines 15-17.) Nowhere does Terauchi discuss contact between a person and a cutting tool, and that contact is different than contact between a guide rod and a blade. Contact with a person typically results in a severe injury while contact with a guide rod is simply a mechanical malfunction. Moreover, the electrical properties of a person are different than the electrical properties of a metal guide rod, and as a result, stopping a cutting tool upon detection of contact with a person is different and more difficult than stopping a blade upon detection of contact with a guide rod.

Terauchi also would not have commended itself to an inventor considering how to make woodworking machines safer because woodworking machines and textile slitters present different dangers. In a woodworking machine as described in applicant's claims, a user typically holds the workpiece and moves the blade into contact with the workpiece to make a cut. If the user's hand is misplaced, if the blade unexpectedly climbs over the workpiece, or if the blade causes the workpiece to shift, then a user's hand could contact the blade and be severely injured. In a textile slitter, however, a user does not hold the cloth or move the blade, so it does not present the same danger.

Another reason Terauchi would not have commended itself to an inventor considering how to make woodworking machines safer is because the structure of Terauchi's textile slitter is different than a woodworking machine. The slitter includes a guide rod, as explained. The cloth is rolled on a tube and the tube is slid onto the rod. The cloth is then rotated on the rod by a chuck and motor. A toothless blade is supported by a carriage and a ball screw is rotated to move the blade into contact with the cloth. (Terauchi, column 2, lines 4-25.) None of this structure is recited in applicant's claims.

In Clay, the Federal Circuit ruled that differences in purpose, structure, and operation between petroleum storage tanks and petroleum extraction methods resulted in petroleum extraction being a non-analogous art. In the case at hand, comparable if not more significant differences between woodworking machines and textile slitters show that textile slitters are non-analogous. Textile slitters address a different problem, present different dangers, and are constructed differently than woodworking machines, as explained. These differences are at least as significant as the differences in Clay.

Another relevant case is In re Pagliaro, 657 F.2d 1219, 210 USPQ 888 (CCPA 1981). The invention in that case involved a process for preparing decaffeinated beverages. The invention used edible fats to extract the caffeine while the prior art used potentially toxic solvents. Id. at 1220. The examiner rejected the claims as obvious in light of a patent to Nutting combined with either a patent to Rector or an article by Aeillo. Nutting taught the conventional process of using solvents. Id. at 1221. Rector disclosed a method of making coffee by grinding coffee beans with oil and then extracting the oil, and Rector said the extracted oil was more heavily charged with the stimulative elements of the coffee. Id. Aeillo discussed the lipoid theory of narcotics, and specifically, the solubility of narcotics in fatty oils. Id. at 1221-1222. The Board of Patent Appeals and Interferences affirmed the rejection and Pagliaro appealed.

On appeal, the Court of Customs and Patent Appeals reversed the rejection because the Board misinterpreted Rector and because Aeillo was non-analogous. The court's discussion of Aeillo is relevant to the case at hand. The court explained:

We regard Aeillo as nonanalogous art, which cannot properly be considered pertinent prior art under 35 U.S.C. 103. In In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (Cust. & Pat. App.1979), this

court stated: "In resolving the question of obviousness under 35 U.S.C. § 103, we presume full knowledge by the inventor of all the prior art in the field of his endeavor. However, with regard to prior art outside the field of his endeavor, we only presume knowledge from those arts reasonably pertinent to the particular problem with which the inventor was involved. (Citation omitted.) The rationale behind this rule precluding rejections based on combination of teachings of references from nonanalogous arts is the realization that an inventor could not possibly be aware of every teaching in every art. Thus, we attempt to more closely approximate the reality of the circumstances surrounding the making of an invention by only presuming knowledge by the inventor of prior art in the field of his endeavor and in analogous arts."

The determination that a reference is from a nonanalogous art is therefore twofold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

Both the instant claims and Nutting involve decaffeination of vegetable materials; whereas, Aeillo compares the solubility of a diuretic solution, such as a caffeine solution combined with an oil/serum mixture, to the same solution combined with an oil/water mixture. He determines that caffeine is "more soluble in serum than in water." From this he concludes that the Meyer/Overton lipoid theory of narcotics, which was based upon experiments using an oil/water mixture, is inaccurate because an oil/water mixture does not approximate the substances found in the human body. Thus, Aeillo's disclosure is not "within the field of the inventor's endeavor." Further, Aeillo is not pertinent to appellants' problem because he is not concerned with either beverage preparation or decaffeination of vegetable materials. There is no common environment which could form a "close relationship" between either the claimed invention or Nutting on the one hand and Aeillo on the other to logically require consideration of Aeillo. In re Antle, 58 CCPA 1382, 1387, 444 F.2d 1168, 1171-72, 170 USPQ 285, 287-88 (1971). An earlier statement by this court in In re Van Wanderham, 54 CCPA 1487, 1494, 378 F.2d 981, 988, 154 USPQ 20, 25 (1967), is particularly appropriate: "Our determination here is not without difficulty. However, we think the difficulty arises from not considering the subject matter as a whole and instead focusing on the scientific principle involved"

In this case, the board erred by focusing on the affinity of olive oil for caffeine without considering the subject matter of Aeillo as a whole and the impropriety of the Aeillo reference, as pointed out above. (Pagliaro, 657 F.2d at 1224-1225.)

In the case at hand, Terauchi is not pertinent to applicant's claims because Terauchi is not concerned with woodworking machines or stopping the motion of a blade upon detection of contact with a person, just as in Pagliaro the Aeillo reference was not pertinent because it did not concern beverage preparation or decaffeination of vegetable materials. There simply is no "common environment" or "close relationship" between a woodworking machine as claimed by applicant and a textile slitter as disclosed by Terauchi, just as there was no "common environment" or "close relationship" between decaffeinating beverages and the solubility of a caffeine solution in Pagliaro. Also, the examiner in the case at hand did not consider Terauchi as a whole, just as the Board in Pagliaro did not consider the Aeillo reference as a whole. Instead, the examiner focused on the fact that Terauchi disclosed a blade that would retract and/or stop if it contacted a guide rod. However, when Terauchi is considered as a whole, one sees that a textile slitter addresses a different problem, presents different dangers, has a different structure, and operates differently than a woodworking machine as set forth in applicant's claims. Because of these differences, Terauchi is not reasonably pertinent to applicant's invention just as Aeillo was not reasonably pertinent in Pagliaro.

2. There is no suggestion to combine Terauchi with the other references.

Even if Terauchi were analogous art, it still would not have been obvious to combine Terauchi with DE '771 and Friemann because there is no suggestion to make the combination. The examiner did not identify any specific understanding or technological principle that would motivate a person of ordinary skill to combine Terauchi with the other cited references. Instead, the examiner simply said it would

have been obvious to combine the references "to prevent any damage during an unsafe condition." (Final Office Action mailed 9/22/06, p. 3.) That statement is similar to the statement the examiner made concerning the combination of DE '771 and Friemann discussed previously, and for the same reasons does not explain why a person of ordinary skill would make the combination. Additionally, the examiner's proffered suggestion of combining references to prevent damage is contradicted by the fact that the force needed to stop the blade quickly enough to mitigate any injury upon detection of contact typically damages the blade. That damage is insignificant compared to the benefit of mitigating the injury, but it contradicts the examiner's proffered suggestion.

Additionally, modifying the circular saw of DE '771 to include a brake mechanism configured to stop the rotation of the blade upon detection of contact would require a substantial redesign and reconstruction of the saw, and Terauchi does not describe how to make such a modification. At the very least, the addition of a brake to the circular saw disclosed in DE '771 would require a substantial redesign of the saw, and that redesign supports the conclusion that the prior art fails to suggest the combination. In re Ratti, 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959).

8. Claims appendix.

1. A woodworking machine having a cutting region for cutting workpieces, comprising:

a movable cutting tool for cutting workpieces in the cutting region;

a detection system adapted to detect contact between a person and the cutting tool; and

a reaction system associated with the detection system and the cutting tool, where the reaction system is configured to retract the cutting tool at least partially away from the cutting region upon detection of contact by the detection system.

2-4. (cancelled).

5. The machine of claim 1, where the reaction system includes a brake mechanism configured to stop the rotation of the blade upon detection of contact by the detection system.

6-18. (cancelled).

19. (allowed) A table saw having a cutting region for cutting workpieces, the table saw comprising:

a circular blade for cutting workpieces in the cutting region;

an arbor to support the blade;

an arbor block to support the arbor;

a pivot pin to pivotally support the arbor block;

a rack gear associated with the arbor block;

a worm gear to engage the rack gear;

a shaft associated with the worm gear and configured to turn the worm gear to move the rack gear and arbor block;

a detection system adapted to detect a dangerous condition between a person and the blade; and

a reaction system associated with the detection system and the blade, where the reaction system is configured to retract the blade at least partially away from the cutting region upon detection of the dangerous condition by the detection system; and

a release mechanism adapted to hold the worm gear in place relative to the shaft during normal operation of the saw, and further adapted to release the worm gear relative to the shaft upon detection of the dangerous condition by the detection system, where the blade is free to retract when the worm gear is released.

20. (allowed) The table saw of claim 19, where the release mechanism includes a channel in the worm gear, a shoulder on the shaft, and a clip positioned in the channel in the worm gear to engage the shoulder on the shaft.

21. (allowed) A woodworking machine having a cutting region for cutting workpieces, woodworking machine comprising:

a circular blade for cutting workpieces in the cutting region;

a detection system adapted to detect a dangerous condition between a person and the blade; and

a reaction system associated with the detection system and the blade, where the reaction system is configured to retract the blade at least partially away from the cutting region upon detection of the dangerous condition by the detection system;

where the woodworking machine further comprises an arbor to support the blade, and where the reaction system includes a compressible bushing positioned between the arbor and the blade and configured to allow the blade to retract due to compression of the bushing.

22. (allowed) A woodworking machine having a cutting region for cutting workpieces, the woodworking machine comprising:

a movable cutting tool for cutting workpieces in the cutting region;

a detection system adapted to detect a dangerous condition between a person and the cutting tool; and

a reaction system associated with the detection system and the cutting tool, where the reaction system is configured to retract the cutting tool at least partially away from the cutting region upon detection of the dangerous condition by the detection system;

where the reaction system includes a spring to push the cutting tool at least partially away from the cutting region.

23. (allowed) The woodworking machine of claim 22, where the reaction system further includes a segment gear and an arbor block releasably linked together, where the arbor block supports the cutting tool, and where the spring is configured to push the arbor block away from the segment gear to cause the cutting tool to retract upon detection of contact by the detection system.

24. (allowed) A band saw having a cutting region for cutting workpieces, the band saw comprising:

a band blade for cutting workpieces in the cutting region;

a detection system adapted to detect a dangerous condition between a person and the blade;

a reaction system associated with the detection system and the blade, where the reaction system is configured to retract the blade at least partially away from the cutting region upon detection of the dangerous condition by the detection system; and

a roller positioned adjacent the blade and configured to retract the blade by pushing against the blade upon detection of the dangerous condition by the detection system.

25-39. (cancelled).

40. (withdrawn) The woodworking machine of claim 1 further comprising a stop to limit the retraction of the cutting tool.

41. (withdrawn) The woodworking machine of claim 40 where the stop includes an impact absorbing material.

9. Evidence appendix.

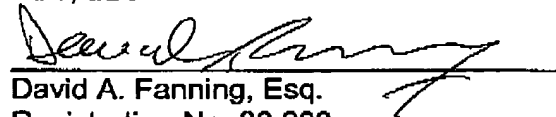
None.

10. Related proceedings appendix.

None.

Respectfully submitted,

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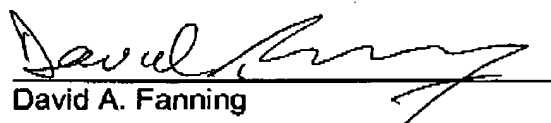
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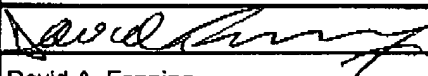
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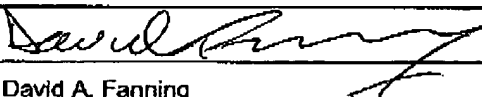
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| | Filing Date | August 13, 2001 | |
| | First Named Inventor | Stephen F. Gass | |
| | Art Unit | 3724 | |
| | Examiner Name | Boyer D. Ashley | |
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